

# Elephants walk more direct paths under risk of poaching

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Elephants move faster and straighter when moving through risky areas says a new study. Credit: Nina Constable/Save the Elephants

Elephants move faster and straighter when moving through risky areas, researchers have discovered, meandering more when safer.

The study by Save the Elephants, the University of Oxford and the University of Twente, further builds our understanding of how [elephants](#) adapt to the threat of poaching and other hostile contact with humans.

Elephants often move between feeding areas that are tens of miles apart, through a landscape that carries varying levels of danger. Previous research has shown that as they move from one part of their home range to another one, they walk fast, slowing to their usual speed when they arrive. Last year, a study by the same authors showed that elephants in risky areas shift their peak activity time from day to night.

Elephants moving through northern Kenya in the Samburu-Laikipia ecosystem were tracked using GPS collars between 2004 and 2014, a period when ivory poaching surged in the area. The risk to elephants varies as they pass between national reserves, community conservancies and zones of inter-tribal conflict, and is measured thanks to a UN-mandated program called Monitoring of Illegal Killing of Elephants (MIKE), which counts elephant carcasses and records the proportion killed illegally

The investigation, led by Festus Ihwagi of Save the Elephants while studying for his Ph.D. at the University of Twente, used the tracking data to measure the "tortuosity" of an elephant's path by combining the speed of [travel](#) with turning angles when they are in the prime feeding areas.

As well as looking at elephants that moved from one area to another, the study also looked at elephants who had stayed in one area that had become either more or less risky over time. These non-migratory elephants also changed their tortuosity in response to threat level.

Lead author Festus Ihwagi, said: "A reduction in path tortuosity implies reduced searching intensity per unit area, which in the long run might have negative implications in the foraging success of elephants in risky landscapes. Changes in path tortuosity can also serve as a useful proxy for changes in levels of illegal killing at the site level."

GPS tracking technology is used across Africa to help guide the deployment of ranger patrols (some 350 elephants are monitored by organizations using the Save the Elephants Tracking App, powered by Vulcan).

By monitoring this data for changes in tortuosity, managers could be alerted that the elephants are experienced increased risk. The discovery could be used to give remote warning that elephants are experienced increased risk, thanks to widespread use of GPS tracking technology on elephants.

Iain Douglas-Hamilton, founder of Save the Elephants and Senior Research Associate at Oxford University's Department of Zoology, said: "Elephants adapt to their landscape with great sensitivity. When the risk is high, they diminish their meandering in search of food and aim to get from one point to the next in safety. By better understanding the decisions that elephants make, we can understand their needs and so help secure their future."

The Samburu-Laikipia landscape is home to over 8,000 elephants. Save the Elephants has been studying them for over 20 years, deploying over 150 tracking collars in this time. For this study five female elephants and six males were tracked for varying lengths of time ranging from two to eight years, with their GPS position recorded hourly. In general, male elephants walk with marginally higher tortuosity than females, but poaching levels influenced the path tortuosity of both sexes similarly. Females, who live in closely-knit families, often have young calves with them and are usually more risk-averse than bull elephants, which explains their generally lower tortuosity.

Key findings from the study include:

- Elephants in areas of high-level poaching walk with straighter

paths than when in less dangerous areas.

- As the illegal killing of elephants increased in parts of Northern Kenya, the elephants reduced their [path](#) tortuosity
- Males generally walk with higher tortuosity, but both male and female elephants similarly responded to [poaching](#) by reducing their overall tortuosity.
- This change in elephant behavior is adaptive to avoid risk, but has a potentially negative effect on the foraging success of [elephants](#) in risky landscapes.

**More information:** Festus W. Ihwagi et al. Poaching Lowers Elephant Path Tortuosity: Implications for Conservation, *The Journal of Wildlife Management* (2019). [DOI: 10.1002/jwmg.21688](https://doi.org/10.1002/jwmg.21688)

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